

REPORT OF MR. HILL.

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The undersigned, appointed an Associate Commissioner on the part of the State of Massachusetts to the Exposition held at Vienna, is directed, by the terms of his commission, to report to the next legislature. In conformity with this duty, he begs to submit the following:—

Under the arrangement made between the writer and his associates, the general organization and conduct of the Commission in Vienna was undertaken by the Chief Commissioner, and the undersigned was charged with the special duty of examining the details of the Exposition. This Report will therefore be principally devoted to a description of this Exposition, a consideration of its relation to the productive industries of the world, and the proper lessons that we should draw from it as citizens of Massachusetts.

The writer, having received his commission on the 31st day of March, 1873, took passage from Boston by steamer of the 12th of April, and arrived in Vienna on the 11th of May, having made only a few days' delay in England, to examine some of the large manufacturing establishments of that country. The troubles in the United States Commission had but a few days before come to a head, and everything connected with our portion of the Exposition was in a state of disorganization and confusion.

Mr. Jackson S. Schultz, appointed by our government to succeed our former Chief Commissioner, arrived, however, upon the 15th of May. The writer considered it his first duty to offer his services to Mr. Schultz, in case he could thus serve the interests of any Massachusetts citizens, or advance the badly delayed exhibition of the United States. Mr. Schultz, however, undertook his work with the help of a small num-

ber of the assistant United States Commissioners, whom he selected at Vienna, and, with his well-known vigor, advanced it much more rapidly than could have been expected.

In this connection, the writer's knowledge of the facts makes it proper for him to speak of the services of Professor E. N. Horsford, of Cambridge, in this State, who, as a member of the scientific commission of the United States, was present in Vienna, and who gave himself unsparingly to the assistance of the Chief Commissioner. Much of the progress which was made, both in the preparation of the exhibits and in the organization of committees, juries, etc., was due to his efforts. Massachusetts exhibitors especially are indebted to him for attention to their interests.

Before the arrival of the writer, Mr. Frank Millett, the secretary of the Massachusetts Commission, who had been despatched by Mr. Adams to Vienna, had secured proper rooms for the use of the Commission. These rooms were at once taken possession of, and the Commission was organized and immediately entered upon the duties assigned to the different members.

As has been said, it was a principal duty of the undersigned to study the details of the Exposition, and, therefore, with the exception of such attendance as was necessary at the office of the Commission, and a week devoted to the Patent Congress, of which mention will be made hereafter, his whole time at Vienna was spent on the grounds.

Upon entering upon the study of the Exposition, the first points which engaged attention were those relating to the general plan of the buildings and their inclosure. This matter seems to have received a great deal of thought on the part of the Austrian authorities, but it is doubtful if they settled it in a way perfectly satisfactory to a majority of visitors; and, in fact, it is not easy of solution in an exposition so large as this. The French Exposition of 1867 was built in the form of an ellipse, in which the different nations occupied segments, whose separating lines radiated from a common centre, while the different classes or groups of exhibits in the different nations were placed in the same ring or circle. Thus, in passing from the centre outward, the visitor was always among the products of the same nation, but went

from one class to another. In moving around the centre on any given circle, he was always in the same group or class, but went from one nation to another. Admirable as this plan was in theory, grave objections were found in practice. First, it was found impossible to adjust properly either the space devoted to each nation, or the relative space occupied by different groups in each nation. Moreover, the building, arranged in this form, could only be lighted from above, and by experience it has been found very difficult to make roofs so lighted water-proof, when only erected for temporary purposes. Lastly, to the majority of visitors, the arrangement described is extremely confusing, on account of the impossibility of keeping the points of the compass, and of finding desired places of exit, after circulating through the curves of the exhibition building. All these defects would have been greatly exaggerated, had the plan of the Paris Exposition been repeated at Vienna, owing to the vastly greater size of the latter exhibition, which was nearly four times that of the former.

The Austrian authorities decided to abandon the idea of the association of like groups in the different nations, except in certain special cases,—as fine arts, machinery, etc., which were placed in buildings by themselves,—and adopted the plan of comparatively narrow buildings, lighted from the side, in which the only aim was to place the products of each nation by themselves. The main building, or industrial palace, consisted of a hall three thousand feet long and eighty-three feet wide; and, to give additional space, this was crossed by seventeen transepts, averaging five hundred feet long by fifty-one feet wide. Parallel with this main building, there was erected a machinery hall, twenty-six hundred and fifty-one feet long, and one hundred and sixty-four feet wide. Beyond these were erected another series of buildings for pictures, statuary and other works of art. This arrangement of comparatively narrow buildings, while it gave an opportunity of lighting from the sides by windows under the roof, added very largely to the cost, on account of the great extent of wall in proportion to the space inclosed. It also rendered the work of one who wished to trace any particular branch of production through different nations very difficult, by

reason of the distances which separated them. This difficulty was again aggravated by the fact that the original buildings proving much too small, between nearly all the transepts covered courts were built; and, in addition to this, other large buildings were erected by several governments, in which a portion of their groups or classes of exhibits were displayed. It thus became a serious work, even for those most familiar with the Exposition, and to all others a hopeless task, to trace a single class of productions through the space of the different nationalities.

Another great objection to the arrangement of buildings adopted was the utter absence of that impressiveness, which arises from general effects. Had the buildings been so designed as to inclose the great mass of exhibits under one roof, and bring them all in sight at one time, the Exhibition would have been wonderfully more grand and interesting than it was. As arranged, it was only to those who spent a long period in daily examination of the various transepts, courts, rooms, buildings, "annexes," special exhibits, etc., that its vastness became apparent. The majority of visitors, who came for a few days and went away again, never saw one-half of the various places of exhibition, and got so confused an idea of what they did visit that it was impossible for them to associate the special rooms, halls, etc., with the nations which occupied them, or to understand the relations of their contents to those of other neighboring apartments.

If it could be decided, before the erection of the main edifice, what space in the whole, and what in each group or class of objects each nation would require, the construction of proper buildings would be much simplified. But this has been found impossible, and in all the later exhibitions the demand by most of the leading nationalities has, at the last moment, been found greater than the space allotted, and they have been forced to place a considerable portion of their articles of exhibition in specially erected buildings, entirely separated from their proper association with objects of the same kind, and from others from the same country. Thus, at Vienna, the American exhibit of agricultural implements—the finest, in some respects, in the exhibition ground—was placed in a building, erected for the purpose, behind the general agricult-

ural buildings of the western European nations. In an obscure place, of special interest to only a fraction of the visitors, it was entirely unseen by the great mass, to whom it would have been a revelation of our mechanical skill and taste, had their attention been drawn to it by finding its exhibits before them while examining the other departments in one common building. The same thing is true of the German school system, of considerable portions of the Swiss exhibition, of the French, of part of the Russian, etc.

The most important points in designing a building for the purpose of an exhibition would seem to be,—

*First*, the study of some water-tight arrangement for lighting from above, by what are called monitor roofs, or otherwise, which would enable the architect to cover in as large a space, both in length and breadth, as he should see fit, in one open area, uninterrupted with corners or angles to break the view.

*Second*, an arrangement of exhibits by which the different nations should have all their goods together, so that what each had contributed to the Exposition could be at once seen, and and an idea easily gained of the character and quality of its productions in each group.

*Third*, the arrangement should be such that the exhibits in the different groups, if not directly contiguous to those of the same groups belonging to the next nation, should at least be disposed in the space of each nation according to some simple and easily understood rule, so that the position of any particular class could be found among their exhibits.

Finally, it would be a great advantage if, while the roof and its supports were erected in good season, the buildings were so constructed that the size could be readily extended in certain directions, so as to be prepared for an unexpected amount of goods from any nation without forcing that nation to break up the proper order and classification of its exhibits by putting a part of them in separate buildings.

In drawing attention to these points, it is to be remembered that, while an exhibition like this is of much interest and value to specialists, men of science, manufacturers and merchants, its great usefulness lies in its character of an instructor of the masses.

The great majority of visitors are only temporary, and therefore to render an exposition of its greatest value to such people it must be so arranged as to enable them to make comparisons easily and clearly.

Undoubtedly, the Vienna Exposition was, above all things, intended as a means of education to the Austrians; but, it is safe to say, that of all the Austrians who visited it, not one in a hundred went away with any clear idea of its vastness as a whole, or of the relative richness of the different countries, in the twenty-six or more classes into which it was divided.

In regard to the buildings themselves and the material of which they were composed, owing to the nature of the soil in the Prater where the exhibition was held, the principal erections were all placed on piles. The walls were of brick, apparently very heavy and covered with cement. The roof was a semi-circular arch. The main entrances were built with much regard to architectural effect, and adorned above with emblematic figures. The most striking portion of the buildings was the huge dome which stood in the centre of the length of the great industrial palace. This was designed by Mr. Scott Russell, and was a really extraordinary undertaking. It stood on a circle of large piers. From the summit of these, angle-iron beams ran up towards the centre, where they all rested against an iron ring which received their thrust. The ceiling of the dome was attached to the underside of these beams. Its base was eighty feet above the ground and three hundred and forty-eight feet across; above, it opened through the ring into a cylindrical lantern, one hundred feet in diameter and thirty feet high, and from that into a smaller lantern. The whole height was not less than two hundred and seventy-five feet.

The portion of the park devoted to the Exposition included about three hundred and fifty acres. On these were, first, the industrial palace, of which we have spoken, running east and west, having its seventeen transepts across it, and its great dome in the midst. Parallel to this on the north, and distant from it about five hundred feet, was the machinery-hall. Between these two, near either end, were large wooden buildings, each covering somewhat more space than the great Coli-

seum, so called, lately erected in Boston, which were devoted to agricultural exhibits. In a line with these, and between the industrial and machinery-halls, were numerous other buildings, —some erected by the various countries to display their surplus exhibits, some the special buildings of private exhibitors.

Beyond the end of the industrial palace were the art buildings, also of brick and stucco, handsomely decorated with architectural ornaments, and surrounded with arcades. In the fifty-two rooms of these buildings were displayed some thirty-two hundred paintings and one thousand statues.

Still beyond these, an arched gateway led to a portion of the grounds in which were many buildings of a temporary nature, some illustrating the various types of peasant houses of Eastern Europe, others built as models of stables, barns, etc., etc. South of the great industrial palace, before its front, were many other erections, such as the Persian and the Egyptian palaces; the Japanese village, of which the very wood was brought from Japan; iron buildings; others of artificial stone; others set up by the lighthouse board, the navy department, and other branches of the Austrian administration. With these were characteristic buildings of almost every nationality, erected as restaurants. Here also was the palace of the emperor of Austria, and, opposite to it, the juries' pavilion. Altogether, there were more than two hundred buildings within the inclosure of the Exposition grounds. These grounds themselves were laid out in squares of the finest turf, intersected with gravel walks, bordered with beds of flowers, and dotted with ponds, in which were fountains. The whole was arranged with that taste which seems natural to the Austrians.

This description gives but a feeble idea of the grounds and buildings of the Vienna Exposition, upon which the Austrian government expended more than ten millions of dollars, and which was intended to be by far the most complete of any that has been held.

Turning from the buildings to the articles in them, the first thing to be noted is this: that, contrary to the general impression in America, the contributions of the different nations were not mere irregular collections of incidental objects, furnished by parties who desired to advertise themselves, but,

on the other hand, were well assorted, and generally complete illustrations of the industries of the several countries, with one unfortunate exception. We believe this is true of all the principal nations. The spirit which seems to have animated them is well illustrated in the address of the French commissioners to the public at the time of their appointment. After speaking of the material advantages to be gained from this Exposition, they continue:—

“Beyond these material advantages, on which it is useless to dilate, so obvious are they, there is always in France a sentiment to which appeal has never been made in vain—that of patriotism. France must be worthily represented at the universal Exposition in Vienna. She must present herself there in a manner to prove that she has not fallen from the high rank which belongs to her in the civilized world, and that on the morrow even of the dolorous events which have lately transpired, she is ready to sustain the reputation she has acquired in the arts—in productions where intelligence and modern science, taste, invention or skilled hand-labor have gained a superiority never contested.”

In this spirit, the French entered into the Exposition, and government and people joined in making it in fact all that this address indicated.

It is but fair to add, that the spirit of the other leading nations was not behind that of the French, and that they made a good and general display of their various industries, regardless of the consideration that they might not gain for them an immediate sale. From this it resulted the Exposition was in reality a universal exposition of the world's industries, and that the visitor could there study the present status of any matter in which he was interested,—in every part of the Old World, at least.

The arrangements of the exhibits of the different nations in the Exposition was simply geographical. Those of the New World being at the extreme western end of the various buildings, the Japanese and Chinese at the eastern, the other countries between, according to their geographical positions. The machinery was, as has been said, in a building by itself, but the exhibits of the different countries were there arranged in the same order. The agricultural machinery and produc-



tions were divided between the two buildings appropriated to them, that between the westerly ends of the main and machinery halls to the western European nations, the other to the more easterly. Many countries—as Brazil, the United States, China, Japan, etc.—displayed what they had of agricultural productions in the great industrial palace, with their other exhibits. The purely art-exhibitions, including paintings, statuary, engravings, etc., were also gathered into their own group of buildings, in whose fifty-two rooms those of each nation were, as far as possible, arranged by themselves.

The relative space occupied by the different countries will be found in the notes following this report. The number of contributors from each country, as represented in the second edition of the official catalogue, will also be found therewith, and will be some indication of the relative display of the different countries. It is to be remembered that the space occupied is not always an indication of the amount of exhibits, as in some countries they were vastly more crowded than in others; and in some, as the United States, any number of duplicates were admitted, while in others, exhibitors were confined to such as would properly illustrate their manufactures. The number of exhibitors, again, has little to do with the number or quantity of the articles exhibited, very much larger and more varied collections being sent by some individuals than by others. Again, in some countries, as the United States, the exhibitors were all individuals, while from others it was often the custom for a large number of persons to make what is called a "collective exhibition." Thus, some of the French silk manufacturers united in exhibition of their products, covering nearly half as much space as all the United States. Also, many cities, many governmental departments, many colleges, museums, schools of agriculture, etc., sent magnificent collections. Many even fitted up large buildings at their own expense, but yet count only for a single exhibitor. Special attention should be given to this mode of exhibition, which secures many advantages at the minimum of expense. The system is calculated to induce a better and more complete collection of the class of productions in question. It enables the parties concerned to avail themselves of the best talent in the arrangement. The importance and size

of the collective exhibition gives opportunity for display, and draws the attention of the public to it in a way that the individual exhibitors could not separately. Should our citizens take, as it is to be hoped they will, a prominent part in the United States Centennial Exposition, this plan is worth consideration by our various classes of manufacturers.

Upon the organization of the Commission, one of the first points which demanded the attention of its members was the manner in which they could best fulfil their duty in respect to the examination of the Exhibition, and their report upon the same. A very slight acquaintance with the Exposition made it sufficiently evident that it would be wholly useless to attempt, personally, a detailed examination of the different groups of the Austrian classification. How utterly impossible the enormous size of the Exposition rendered this undertaking, is shown by the work of the juries. Most of the important groups were subdivided among various sub-juries, so that in fact there were eighty-one actual parties who entered upon the jury-work. These juries threw themselves into their labors with the utmost energy, yet many of them were more than two months in the examination of their special groups. Another consideration with the Commission was this: that a valuable examination could only be made in the different groups of persons who were specialists, as it were, and who entered upon the work with a previous knowledge of the art. For these reasons they determined, as has been stated in the report of the Chief of this Commission, to employ so far as they could find them at hand, and as far as the appropriations of the State would permit, persons in the work who would answer to the description of specialists in the various departments. In addition to the reports thus engaged, the undersigned will only call attention to some general considerations which the study of the Exposition suggested, and which seem to him worthy of notice. And first, of the comparative condition of the arts in the United States and in other countries. On this point, it may be said that in all practical matters,—in machinery, in agricultural tools, perhaps in the preparation of articles of food,—in the groups from V. to XVIII., so far as matter is concerned, and not the style or

taste, including textiles, leather and rubber, metal and wood industry,—in manufacture of paper, sugar, and the thousand other useful matters,—in our philosophical and surgical, and in musical instruments,—we appeared, or should have shown ourselves, if we had been adequately represented in this Exposition, quite on a par with any other people. In machinery of every kind, it was universally conceded that our collection, small as it was, and lacking in every direction those labor-saving inventions so familiar to us at home, but unknown abroad, was still the most original and admirable display in the machinery-hall. Among other modes of improving the opportunities of the Exposition of Paris in 1867, the British government sent, as they did also to Vienna, a commission of practical artisans, whose reports, afterwards printed, were among the most interesting and valuable of the former exhibition. As a result of their examination of American machinery, one of them made the following statement:—

“ In our country we seldom go back to first principles in invention. We cling to some parts of the old arrangements. If a motion has been circular, we try to make a better circular motion; if horizontal, we try to get better results by a superior horizontal arrangement, but seldom think of throwing to one side all that has been done. The American, on the other hand, seems to look at two things—the means at his command and the end to be attained; he seldom troubles his head with the laws or the opinions of others.”

Another of the same artisan commission writes, speaking of the Americans:—

“ The rough-and-ready way in which they cast aside old theories, the boldness with which they start out on a new and untrodden path, the entire confidence they have in themselves, and their sagacity in finding out what is to be done and doing it—all find expression in their work. \* \* \* Many a good thing rough-hewn by them is destined to live, and influence the future of the world.”

These statements are quoted because they are very admirable illustrations of the character of our inventive talent, and because they express very forcibly what was constantly said both by

English and by Germans and Austrians, respecting our mechanical exhibitions at Vienna. In respect to our display of agricultural implements, it was very strong in mowers and reapers and very weak in other directions. But in both these important machines Americans had every reason to be satisfied. The contrast between them and those of other countries was very marked. The lightness and strength, the convenience in operating, the superior workmanship, were all acknowledged, and have resulted, as we are informed, in giving to the American manufacturers nearly all the business of supplying the agricultural regions of Eastern Europe.

The qualities which give these implements their superiority have given the American-made sewing-machines the same, and they are sold in Europe at much higher prices than the same styles of European manufacture. It is said that even where American companies have carried to Europe American machinery and an American foreman to oversee the work, that they are unable to produce the same quality of machines as are made in America. This can only be due to the superior character of our workmen, a superiority arising from their higher intelligence, and this again from their better education. In the opinion of the writer, the superior character of these machines to those of European manufacture is borne out by that of many other classes, which were not displayed in the Exposition. In many departments it is not unreasonable to believe we should have a good foreign market were our machines better known.

In the great departments of Group I., mining, quarrying and metallurgy, and Group II., agriculture and forestry, it was made evident to us that the leading nations of Europe have given far more attention to the matter of scientific education than we have done, and the exhibition of the various schools of mines, of agriculture, etc., were among the most striking and interesting portions of the Exposition. The pursuit of agriculture is to us in Massachusetts, of course, of more general practical interest than that of mining, and more attention was given to the subject, and as a result of our observations our confidence in the advantages of a scientific education as a foundation for its successful pursuit was generally strengthened. A special report on this subject has been prepared, and is particularly

recommended to the attention of our citizens. In the department of forestry, most striking exhibitions were made,—the leading schools, forestry associations and departments, in a number of instances erecting large houses in the rough style of the forest buildings to illustrate this work. These were filled with specimens of the native woods, worked and unworked, of the various articles produced from the wood in the forests or in their neighborhood, samples of machinery and tools used, and especially with maps, plans, models of dams, slides, rope-tramways, and all the means of illustrating their modes of carrying on their work. With these were numerous books on the subject and many volumes of written reports, showing the details of the management. From the great attention given by the Austrians and other older nations to this branch of industry, we should do well to draw a lesson. It is believed that if the State would constitute either a special commission, or a branch of the board of agriculture, that should give particular attention to the subject of forestry, should examine the foreign modes of encouraging arboriculture and making it pecuniarily productive, and should aim at giving popular information and awakening popular interest on the subject, it would be vastly to the interest and advantage of the Commonwealth.

But if in those industries which tend to the physical comfort and convenience of mankind the United States stood as high as, and in many respects higher than, other countries, in the Exposition, it was far otherwise in the sphere of art, both in its purer conditions of painting and sculpture and in its application to manufactures. In the preparation for the Exposition in this country, those gentlemen who originally had the charge of our interests did not, with one or two exceptions, apparently command the confidence of our artists nor of our manufacturers who depend on their art or taste to give value to their works, sufficiently to persuade them to send their productions to Vienna. Moreover, a single walk through the art-galleries and down the great nave of the industrial palace, in which the exhibits of the applied arts were generally assembled, would have satisfied the most doubting that if we had done the best we could we should have still made a most deplorable failure in this side of the Exposition.

In the arrangement of the exhibits, this department was made the most prominent of the whole. Passing by the art-galleries, and speaking only of the arts in their applications to industry, the whole of the great central nave of the main building was substantially devoted to this form of art. With the English, the most magnificent displays were made of porcelain, pottery and glass; and the cases of the Mintons, Copeland, the Worcester works and Wedgwood were splendid illustrations of the value that this nation sets upon this work. Nor were the French behind them. The porcelain of E. Colinot, Deck and Jules Harvey, of Cristofle, Barbadienne and others; sustained their ancient reputation. It is said that the English in earlier Expositions were much astonished and mortified at the inferior position in which they appeared in comparison with the French, and set themselves to work in earnest to introduce a better and higher art into this class of work. We do not think we are wrong in saying that to-day they show in this department a more varied collection of beautiful forms, a more original taste, and a better application of the models of antiquity, and of the ideas of such nations as the Indian and the Japanese and others, than do the French.

In artistic metal-work there were some admirable displays,—as those of Elkington and Hancock, in the English department, of Barbadienne and Cristofle among the French. Of the work of the latter too much cannot be said. Much of the painting and sculpture of the French, though powerful and artistic, is morbid in its character, rioting in the horrible or the sensual; but in this metal-work of Cristofle's, the art was of the purest and simplest character, taking its subjects from the most common objects of nature, and working them into the ornamentation of the material with a simple grace as healthy in tone as it was artistic in character. Both English and French work in this department, and measurably also in that of pottery and porcelain, showed very distinctly the influence of Japanese art, the merits of which they incline to adopt without taking its absurdities.

In furniture, the English had some very artistic work. Their manufacturers employ some of the best artists to pre-

pare designs for them. The simplicity and beauty of these are very far removed from the heavy styles, overloaded with machine-made ornaments, which we too generally find with us. In furniture, the Austrians were, however, perhaps of all exhibitors, the strongest. Their forms were for the most part very simple, and their great effort seemed to be to bring out as strongly as possible the natural beauties of the wood. Where ornament was introduced, it was in the form of inlaying, or of hand-carving. The artistic feeling of Europe seems to have recognized the fact, that those objects alone are really beautiful which have been produced by hand-labor, and by the individual thought and taste of the artist applied to each individual ornament.

A very attractive department in the Austrian section, and one to which they devoted much attention, was that of interior decoration. Many small rooms were fitted up by different artists, and, without exception, the combinations of colors and effects were those of refined and cultivated tastes.

One of the most interesting collections, in which artistic feeling had scope to display itself, was that of the carpets, of which there were literally hundreds in the Exposition. Undoubtedly the East, with her hand-made work, carried the day here, and of the Eastern nations the Persians were perhaps the most perfect. Equal to any in richness of effect, they surpassed in the perfect harmony of color. It is needless to say that the good feeling of all these Eastern nations leads them to avoid those glaring contrasts of color and staring patterns which are too common in our windows; and it was noticeable also that all their figures had a perfectly flat effect. The apparent projection of flowers, fruit and geometrical figures, looking as if in danger of tripping the foot at each step, is most carefully avoided. The English, and in a measure the French, showed the effects of a study of these Eastern productions, and the best work of the English certainly was in styles borrowed from them.

The Austrians were still closer students of these Eastern nations, and much of their display could hardly be distinguished from its original.

Of cast-metal artistic work there was an immense quantity

in the Exposition, not only in bronze, but in iron. Special attention is called to this latter material, because its management has become so well understood in its application to this purpose, that it produces as clear and fine-surfaced castings as bronze, and in this way good works of art can be cheaply supplied.

The rooms of the fine-art buildings, many as they were, were always filled with crowds of people. The number of visitors here was the best evidence of the general interest taken in Europe in the arts. The report which we have caused to be prepared, to present with this, will say all that is necessary on this point.

These few lines have been devoted to a description of the art-manufactures exhibited at Vienna, not for the purpose of attempting to give any idea of their artistic merit, nor of their extent, but only to show how great a degree of attention is now given abroad to this form of industry.

Both governments and people there are exerting themselves to extend and improve the popular taste for art, and to elevate the artistic character of their national productions. To this end they are encouraging their museums and schools of art, and the general introduction of drawing in their public schools. The influence of the Kensington Museum upon the taste and the artistic character of the English manufacturers cannot be overstated, and the wonderful advance they have made between the Paris Exposition and that of the present year, is largely due to its teachings. Among other modes of instruction, it makes appropriate collections of works of art, and sends them out into the different manufacturing districts, there to remain for several months, open to the free inspection of all who wish to study them. On the Continent, also, those interested speak in the highest terms of the influence of their museums and art-schools in improving the general taste. One of the most noticeable things about the art-manufactures in the Exposition, was the number of beautiful and characteristic objects which were bought for these different European museums.

This is not the place to discuss the propriety of encouraging art in comparison with merely mechanical labor, nor to



consider how far, as a nation becomes richer, it is necessary to elevate the tastes, and to furnish new and high interests to the people, if we should prevent them from degenerating into luxury and dissipation. Our State has taken its position in this matter, by introducing drawing into the public schools, and by the encouragement of artistic study in the schools of technology; and it only remains to push on the work as vigorously as possible. The encouragement of museums is certainly one of the most direct and effective means of so doing, and, great as is their influence in Europe, they would be much more powerful here. Indeed, something of the kind is essential to our art-education. Students and the public in Europe have the great advantage over us of living in countries where they are continually in presence of art-work. With us, who have not this inspiration, there remains only the influence of museums, as a means of cultivating an artistic taste in the community. The writer believes that with us the natural taste is better than in most European countries, and that, with proper effort, our people can be educated to take high rank as artistic producers; and it is not impossible that when we do acquire an artistic skill, our work will be found to be more original and more beautiful than that of many people now far in advance of us in this department.

Some consideration was given by the writer at Vienna to the question of the value of Expositions—which may be considered as a species of temporary museum—as a means of developing industry, both of a practical and an artistic character. In the United States, particularly, there has been a tendency to think lightly of them. It is believed that this is a mistaken view. In respect to the international exhibitions, held in foreign countries lately, it has been felt that, as an immediate means of advertising our productions, they were of no use to us, on account of the higher range of prices prevailing in the United States. In this there is less difference than is commonly supposed; and there is an advantage in many classes of our productions—in point of convenience, adaptability, or amount of work they will perform, or that they will endure—which would more than outweigh this difference, were their quality and character better understood abroad.

Again, there is in some quarters an idea that we are so superior to other nations that we have nothing to learn from them. It is perhaps true, in regard to certain industries, that we could teach more than we could learn; but in entertaining this opinion, there is great chance that others, who are taking every advantage for educating themselves, may be passing us in the contest. In other industries—pertaining to matters of art especially—our citizens, admitting our inferiority, have undervalued the artistic side of expositions, and the value of art generally. Leaving the moral and social considerations out of view, we believe there cannot be a greater mistake, in view of material prosperity. The State, like the individual, which can add to its practical skill good taste and artistic ornament, has added another element to its means of progress in wealth and influence.

So far, then, from joining in the general feeling in regard to foreign expositions, the writer believes that they can be made of very great value to us. Had our manufacturers more generally sent their productions to Vienna, it cannot be doubted that they would have been repaid, both pecuniarily and as a matter of education. While there is too much disposition with us to rest in the belief that we cannot reach foreign markets, the English, French, and above all, the Germans, are using every effort to learn the tastes and wants of other nations, and to adapt themselves to them, and are seeking every means to show what they can furnish.

We, in Massachusetts, cannot now afford to let pass any opportunity for educating our producers, nor for opening new markets.

The last census reports show that we are hardly holding our own with the rest of the United States in the increase of our manufacturing interests, and that some of them are in fact advancing much more rapidly than we.

In former times, the rocky nature of our soil and our climatic conditions forced us into manufacturing industries, in which we acquired a skill and reputation which made it difficult for other parts of the country to compete with us; but with the increase of wealth in other sections, the requisite skill is there being gained for competition with us, and we

can only hold our own by a careful encouragement of every means of keeping us up with the latest improvements, of introducing among us new departments of manufacture, especially in the direction of matters of taste and art, and finally of opening to us every possible avenue for the disposal of our manufactures, and teaching us how to adapt our wares to these new markets. We think the State has shown its disposition to do this in the encouragement of scientific schools, whence well-trained and liberally educated men will carry a new influence into our manufactories, and in the introduction of drawing into our schools in a manner which will develop in the next generation new and artistic forms of productions. But we believe that these means may be more powerfully supplemented would the Commonwealth lend its influence to the encouragement of properly conducted expositions among ourselves in other departments, as it does in agriculture. By a full comparison of our productions through the intercourse which would thus be produced among our manufacturers, by a well-directed effort to bring in the work of others in other parts of the United States and from abroad, and finally by getting together and setting open to the body of the people all these works of art, both pure and applied to industry, which are either not known or not appreciated by our citizens at large, we believe a stimulus could be given to industry more immediate and more powerful than in any other way. By making such an exposition a bonded warehouse, our importers and their foreign correspondents would willingly place in them many illustrations of European productions, which could be afterwards sold or returned.

Passing this point, attention is also called to the Centennial Exposition of 1876. The declaration was general, especially with the Germans, that they should attend it, and if properly conducted it cannot but be a success. Besides the Europeans who will visit it, it will collect large numbers of people from South America and the West Indies, and many from Japan and the East. The Japanese have already signified their intention of making a full and imposing display of their productions.

In view of these facts, the policy cannot be too strongly

urged, of making an early effort for a full exhibition by the State of Massachusetts at this Exposition.

Among the branches which were most thoroughly developed at Vienna was that of education. It was made a matter of great prominence by the directors of the Exposition, and the means of illustration, in buildings, material for instruction, publications, etc., were numerous. This portion of the exhibition and our place in it is passed over here, as the Special Commissioner, Mr. Philbrick, has, no doubt, fully developed it.

Among other objects of the Exposition, an endeavor was made by its promoters to take advantage of the number of strangers whom they expected it to bring together to hold a series of congresses upon important international matters. Of these, that upon patents was perhaps the most important to our interests. The patent laws are at present in a very unsatisfactory condition on the Continent. Either it is almost impossible to procure a patent, or with states which grant them, the construction of the courts is such that they are practically valueless. The industrial activity of the United States, however, and the apparent influence of our patent system on invention, are beginning to have their effect; and there is a large portion of the more liberal party which desires to introduce the advantages of a good patent system. In England, also, there is a strong disposition to alter their patent laws, so as to make them more like ours. It was believed that if those of this way of thinking could organize and unite upon a strong declaration in favor of patents as promoters of industry, and could prepare a simple statement of the principles upon which a good patent law should rest, such action would be the first, and a very large, step towards the desired alteration of their patent laws.

At the request of the Director-general of the Exposition, Baron Schwarz-Senborn, who took a most lively interest in this congress, the undersigned believing that he should subserve the interest of the State in so doing, became a member of the preparatory committee, and afterwards at the nomination of the same gentleman, was elected vice-president of the congress on the part of the United States. This body car-

ried out its work in the most satisfactory manner, and at its adjournment instituted a permanent committee to carry on the agitation of the matter, with authority to call another meeting when it should seem advantageous. It is reported that this congress is already producing fruit, and that both Switzerland and Belgium, at present without a patent law, are very seriously debating the necessity of establishing one, while the effect of its action is also felt in other states. If this congress should result, as there is ground to hope it will, in the establishment of a good and well administered patent law on the Continent, it will be a matter of vast advantage to our inventors and manufacturers.

HAMILTON A. HILL,

*Associate-Commissioner for Massachusetts to Exposition at Vienna.*

*Number of Exhibitors from the different Nations referred to in  
Mr. Hill's report.*

United States, . . . . .	914
Venezuela, . . . . .	294
Great Britain and Colonies, . . . . .	1,741
Portugal, . . . . .	433
Spain, . . . . .	2,181
France, . . . . .	3,691
Switzerland, . . . . .	1,074
Italy, . . . . .	3,735
Morocco, . . . . .	13
Sweden, . . . . .	944
Norway, . . . . .	152
Denmark, . . . . .	475
Belgium, . . . . .	550
Netherlands, . . . . .	355
Germany, . . . . .	5,789
Austria, . . . . .	7,382
Hungary, . . . . .	3,478
Russia, . . . . .	1,197
Caucasus, . . . . .	281
Greece, . . . . .	293
Turkey, . . . . .	5,843
Roumania, . . . . .	1,470
Egypt (by Government).	
Tunis, " . . . . . objects,	641
Morocco, " . . . . .	
Persia, " . . . . .	
Siam, " . . . . .	
China, " . . . . .	
Japan, " . . . . . objects,	4,000
Guatemala, . . . . .	16
Chili, . . . . .	-
Brazil, . . . . .	222
Uruguay, . . . . .	61

*Space in Square Metres allotted to each Country in the Industrial, Machinery and Agricultural Halls.<sup>1</sup>*

COUNTRIES.	Industrial Hall.	Covered Courts.	Machinery Hall.	Agricultural Hall.
Austria, . . . . .	14,767	15,000	11,000	13,000
Germany, . . . . .	6,714	2,000	10,000	8,000
France, . . . . .	6,308	3,500	5,580	2,500
England, . . . . .	6,369	2,500	5,305	7,000
Russia, . . . . .	3,319	800	1,250	600
Hungary, . . . . .	2,972	1,000	350	7,500
Italy, . . . . .	2,972	—	950	950
Turkey, . . . . .	2,938	—	—	—
Belgium, . . . . .	2,613	700	3,000	356
China, Siam and Japan, . . . . .	1,650	800	—	—
United States, . . . . .	1,358	1,500	1,250	1,150 <sup>2</sup>
Switzerland, . . . . .	1,125	900	3,049	475
South America, . . . . .	1,090	—	—	—
Egypt and Central Africa, . . . . .	1,003	—	—	—
Holland, . . . . .	880	500	240	275
Greece, . . . . .	867	—	—	—
Sweden and Norway, . . . . .	865	—	280	260
Roumania, . . . . .	637	—	—	—
Spain, . . . . .	605	—	—	640
Portugal, . . . . .	519	—	—	350
Persia and Middle Asia, . . . . .	346	—	—	—
Tunis, . . . . .	259	—	—	—
Morocco, . . . . .	86	—	—	—
Denmark, . . . . .	—	800	300	170

<sup>1</sup> These measures must be taken as approximate merely. It was impossible to get reliable statements from authoritative sources. In the above table, no note is taken of separate buildings erected by various governments and individuals, except in the case of the agricultural hall of the United States.

<sup>2</sup> Separate building.